



Faculty Working Papers

SOME FORMS AND ECONOMIC EFFECTS OF A
WAGE EARNERS' INVESTMENT FUND

Hans Brems

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College of Commerce and Business Administration
University of Illinois at Urbana-Champaign

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Preface

The present report is an attempt to describe as simply as possible some important forms and effects of a wage earners' investment fund. No attempt has been made to describe, let alone discuss, ethico-philosophical justifications of such a fund——such a discussion would fall outside the province of scientific inquiry.

The perusal of the report itself, unlike some of its references, requires skills in neither advanced economic theory nor mathematics. Intuitive verbal reasoning may carry the analysis quite far in some directions and has been used wherever possible. Where only mathematical analysis and computer simulation will cut through, the report reproduces graphically a few results of such work published elsewhere by the writer.

Urbana, Ill.
Labor Day, 1974

Hans Brems

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Labor Day, 1974

S O M E F O R M S A N D E C O N O M I C
E F F E C T S O F A W A G E E A R N E R S '
I N V E S T M E N T F U N D

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I. THE FORMS

1. The General Idea

Serving the dual purpose of giving labor a share of, first, the capital gains accruing to stockholders in an inflationary

economy and, second, the co-determination rights inherent in stock ownership, a wage earners' investment fund would work like this. Preferably in the form of corporate stock employers would contribute a fraction of either their wage bill, their profits bill, or their equity. We shall call the three forms an investment wage, profit sharing, and equity sharing, respectively. The fund would belong to the employees and would issue nonnegotiable fund certificates to them. The fund certificates might be shared equally or might be distributed in proportion to the wage income of the individual employee. A specified number of years after its issue a fund certificate would become redeemable in cash at a price which would include the share of that certificate in the original contribution to the fund and all capital gains and dividends made on that contribution during the lifetime of the certificate. In principle at least, the fund would be allowed to sell contributed corporate stock at

any time and buy other stock.

Three important choices to be made are, first, among an investment wage, profit sharing, or equity sharing; second, between a voluntary or a compulsory scheme; and, third, between a centralized or a decentralized fund. Let us briefly consider the three choices.

2. Investment Wage, Profit Sharing, or Equity Sharing

The opportunities for escaping a compulsory scheme differ among the three alternatives. The wage bill is something objective, and escape is virtually impossible. The profits bill is less objective, and profit sharing offers an inducement to excessive depreciation and to a distortion of the financial structure of the firm: If profits are defined simply as profits after interest the firm is induced to substitute borrowed

capital for equity capital. Such a temptation can be eliminated by sharing merely profits after interest on borrowed as well as equity capital. Equity sharing, too, induces the firm to minimize equity. The remainder of the present report will divide its attention equally between the investment wage and profit sharing.

3. A Voluntary or a Compulsory Scheme

A wage earners' investment fund might result from an agreement between an employer and his employees. No statute would be required. But the government might induce the parties to conclude such agreements by offering them subsidies or tax relief in proportion to the contributions.

Under voluntary profit sharing within the firm ("betriebliche Ertragsbeteiligung") the employees of the firm are given a share of the profits of the firm, hence may develop an interest mani-

festing itself in higher labor productivity.

Under compulsory national profit sharing ("überbetriebliche Ertragsbeteiligung") the employees of all firms receive a share of the pooled profits of all—or at least all the largest—firms in the economy. An interest manifesting itself in higher labor productivity is hardly to be expected from such pooling. What can be expected is, perhaps, more labor tolerance of profit making, Lundberg [31], 30, or of government incomes policy, Det økonomiske Råd [11], 18.

The remainder of the present report will confine itself to compulsory schemes.

4. A Centralized or a Decentralized Fund

To a centralized fund noncorporate firms would contribute cash, and corporate firms would contribute stock. The cash would

be placed in other stock. Sale of stock would be necessary to finance redemption. In principle the fund would be allowed to sell contributed or acquired corporate stock at any time and buy other stock. Return maximization would require full freedom to do so. Obviously the fund would have enough work to do.

Alternatively, investment could be decentralized. The individual employee could be free to choose between a fund, or a number of funds, on the one hand, and more traditional placement on the other, e. g., accounts in savings banks or banks, own-home construction, etc.

The remainder of the present report will primarily visualize centralized investment.

As illustrations of these principles, let us now survey very briefly some existing and proposed schemes in four European Community countries¹.

II. FOUR COUNTRIES

1. Federal Republic of Germany

Germany has long experience with, first, nonfunded, voluntary profit sharing within the firm, e. g., at Siemens and Farbwerke Höchst, and, second, a funded, voluntary investment-wage scheme enacted in 1961 [37], 111-136. The latter was revised twice and is now so appealing that two-thirds of German wage earners are participating. Contributions may take the form of stock, bonds, or cash as agreed, may be agreed upon within a maximum of 624 DM per annum, and are generously supplemented by government cash subsidies, i. e. 30% or, if the employee has more than two children, 40%. The redemption period is 7 years. With the employer's consent the contributions may be placed in stocks or bonds issued

by the employing firm, but there are extra inducements to place them in blocked accounts in savings banks or banks, or to use them to finance own-home construction.

So much for the experience. Now for the proposals. Compulsory profit sharing was first proposed by Gleitze [24] in 1957. Employers should never be deprived of the use of capital, he said. Hence, in the form of corporate stock or bonds rather than in the form of cash, employers should contribute compulsorily a fraction of their profits bill to the fund. Later German labor thinking, beginning with Büttner [9] moved away from contributions in the form of bonds: If free to choose, a firm whose internal rate of return were greater than the bond rate would choose to contribute bonds; a firm whose internal rate of return were less than the bond rate would choose to contribute stock. Thus the fund would find its portfolio composed of first-rate bonds but second-rate stock. Moreover, one of the

purposes of a wage earners' investment fund was to give labor a share of the capital gains accruing to firms under inflation, and no such gains are made on bonds. The fund should issue nonnegotiable fund certificates to all employees. At invalidity, retirement, or a specified number of years after its issue a fund certificate should become redeemable in cash. In 1961 the Gleitze Plan was endorsed by Deutscher Gewerkschaftsbund (German federation of labor unions) [18] but only after two significant modifications, i. e., first, that contributions should be in the form of stock, not bonds, second, that fund certificates should be redeemable at any time. The former modification remains, the latter has since been abandoned by German labor.

In 1974 the German coalition government published the principles [21] of a bill proposing compulsory profit sharing. Contributions were to be in the form of corporate stock or, subject to a penalty, cash. Smaller firms were exempt. The

contribution fraction was to be progressive, reaching a maximum of 10%. The redemption period was to be 7 years—the same as that of the existing investment-wage scheme. An actual bill was not put before parliament, and the matter was declared to be a dormant one by the subsequent Schmidt cabinet.

2. France

A compulsory profit-sharing scheme was enacted by France in 1967 [37], 79-80 and 92-95. All corporations with more than 100 employees must contribute a fraction of their profits after interest on borrowed as well as equity capital. Contributions may take the form of stock, bonds, or cash as agreed. The redemption period is 5 years. Contributions may be placed in stocks or bonds issued by the employing firm, in blocked accounts in savings banks or banks, or in wage earners' investment funds investing in the stock market. French individualism rears

its head: Employee shares are not equal but are distributed in proportion to the wage income of the individual employee.

Although the French scheme is compulsory it enjoys generous subsidization: All contributions entitle the firm to an exactly equivalent tax relief.

France has a not insignificant nationalized sector. Inherently a nationalized firm issues no stock, but for the sake of the wage earners' investment funds 1973 legislation has created such stock.

3. Denmark

In 1973 a bill proposing a compulsory investment wage failed to pass in the Danish parliament. The bill, Arbejdsministeriet [1] was a modified union proposal, Landsorganisationen [30]. Both proposed a large central fund and a contribution fraction of 5%.

Two-thirds of the contribution by corporations had to be own stock subject to the rule that at no time could the fund own more than one-half of the total stock of a corporation. The bill proposed a redemption period of seven years, whereas the unions had proposed five years.

4. Britain

With the purpose of paring down consumer demand to wartime output of consumers' goods, Keynes proposed, in How to Pay for the War [27] a "deferred-pay" scheme calling for £550 million in annual compulsory saving. The complete scheme, including "the accumulation of working-class wealth under working-class control," would embody, Keynes said in his preface, "an advance towards economic equality greater than any which we have made in recent times." Keynes' proposal was adopted strictly as a

wartime measure and to less than a quarter of his suggested sum, Maital [33], 166.

After almost 30 years of silence a wage earners' investment fund was again proposed in Britain in 1973, this time by the British labor party. The proposal followed the Danish bill of the same year: Compulsion, the large central fund, the seven-year redemption period, all employees receiving equal shares. But there were two differences. First, the contribution would be in the form of equity sharing rather than an investment wage. The second difference follows from the first one. Nationalized firms do have a wage bill but do not issue stock, hence were exempt from the British proposal. The French idea of creating stock in nationalized firms was rejected as a first step toward denationalization.

III. MACROECONOMIC EFFECTS

1. Macroeconomics

Typical macroeconomic theory visualizes a weirdly simplified world: Capitalist-entrepreneurs produce a single good from labor and a capital stock of that good, hence investment is the act of setting aside part of output for installation as capital stock. Capital stock is the result of accumulated savings.

A macroeconomic model, then, can have only one income distribution in it, i. e., between labor and capitalist-entrepreneurs, and only one resource allocation in it, i. e., between consumption and investment. The model can illuminate the effects of a wage earners' investment fund upon the income distribution between labor and capitalist-entrepreneurs and upon resource allocation between con-

sumption and investment. This much it can do and no more. For the moment, however, that is all we want.

2. The Generation of the Fund

In the form of corporate stock let all employers contribute compulsorily either a fraction of their wage bill or of their profits bill to a wage earners' investment fund. The fund will be growing for two reasons. First, what is being put into it is growing: The wage bill or the profits bill themselves are growing. Second, once put in, the contributions will be put to good use and earn a return in the form of capital gains and dividends. Let such earnings of the fund be compounded, and let all wage earners present their fund certificates for redemption as soon as the latter become redeemable. Redemption at a certain time is then the original contribution to the fund and all capital gains and dividends made on that con-

tribution during the redemption period.

3. Wage Earners' Disposable Income

Define the wage bill as including the employers' contribution to the fund in the form of an investment wage. Under the latter, then, we define labor's disposable income at any time as the wage bill minus contribution plus redemption at that time.

So at any time there is a reduction by the contribution and an enlargement by the redemption. Which is the larger, the reduction or the enlargement? Well, what is being redeemed is the contribution made ρ years ago, where ρ is the redemption period, plus all capital gains and dividends made on that contribution during those ρ years. Because the wage bill is growing, the contribution made ρ years ago was smaller than the current contribution. But under

realistic growth, the capital gains and dividends made during those ρ years will more than make up for the original smallness. Consequently, after ρ years the sum of the original contribution to the fund and all capital gains and dividends made on that contribution during the ρ years will exceed the current contribution. As a result, labor's disposable income is larger than it would have been in the absence of a wage earners' investment fund.

This holds even more under profit sharing where we define labor's disposable income as merely wage bill plus redemption. There is no reduction here, only enlargement!

4. Capitalist-Entrepreneurs' Disposable Income

Let us follow convention and exclude capital gains from the disposable income of capitalist-entrepreneurs. Under an investment wage their disposable income is, then, their profits on all capital stock except the fund. So a wage earners' in-

vestment fund reduces their disposable income by the profits they used to make on the capital stock that now belongs to the fund. There can be no doubt, then, that the disposable income of capitalist-entrepreneurs is smaller than it would have been in the absence of a wage earners' investment fund.

This holds even more under profit sharing. Here we define the disposable income of capitalist-entrepreneurs as their profits on all capital stock except the fund minus their contribution to the fund. There is a further reduction here and still no enlargement!

5. National Disposable Income

Until now everything has been straightforward: A wage earners' investment fund raises labor's disposable income and lowers that of capitalist-entrepreneurs. But what will it do to

national disposable income? Will the enlargement be greater than, equal to, or less than the reductions? The enlargement is always the redemption. The reductions are, first, the profits the capitalist-entrepreneurs used to make on the capital stock that now belongs to the fund and, second, the contribution to the fund either in the form of the investment wage or in the form of profit sharing.

Whether the enlargement will be greater than, equal to, or less than the reductions is not intuitively evident. Where intuition fails, one must build numerical models and try to make their structure as realistic as possible. Within such a realistic framework computer simulation may then give the answer.

6. Computer Simulation

By computer the present writer has simulated the invest-

ment wage [7] as well as profit sharing [6]. Both were examined within the framework of a one-good neoclassical steady-state growth model [5], Ch. 5, with immortal capital stock in a Cobb-Douglas production function, assuming a labor exponent of $3/4$, a capital-stock exponent of $1/4$, a propensity to consume national disposable real income of $7/8$, a zero growth rate of the labor force, and a technological progress of 3% per annum. In the absence of a wage earners' investment fund such a growth model generates the plausible results that physical output and capital stock are both growing at 4% per annum, and that the rate of return to capital exclusive of capital gains is 8% per annum. When a wage earners' investment fund was put into the model, it generated the effects upon steady-state disposable income shown in Figures 1 and 2.

Figures 1 and 2 show the effects of an investment wage

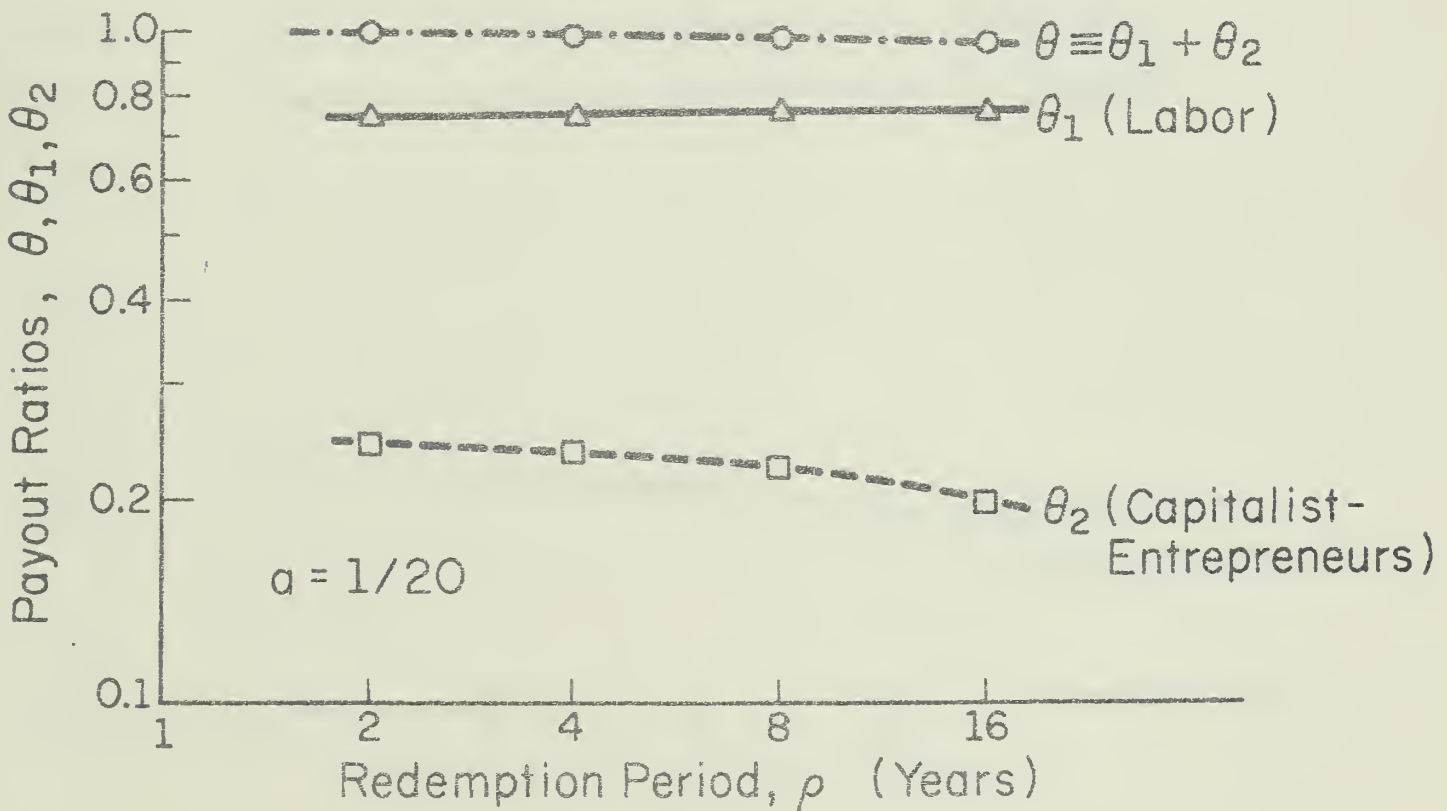
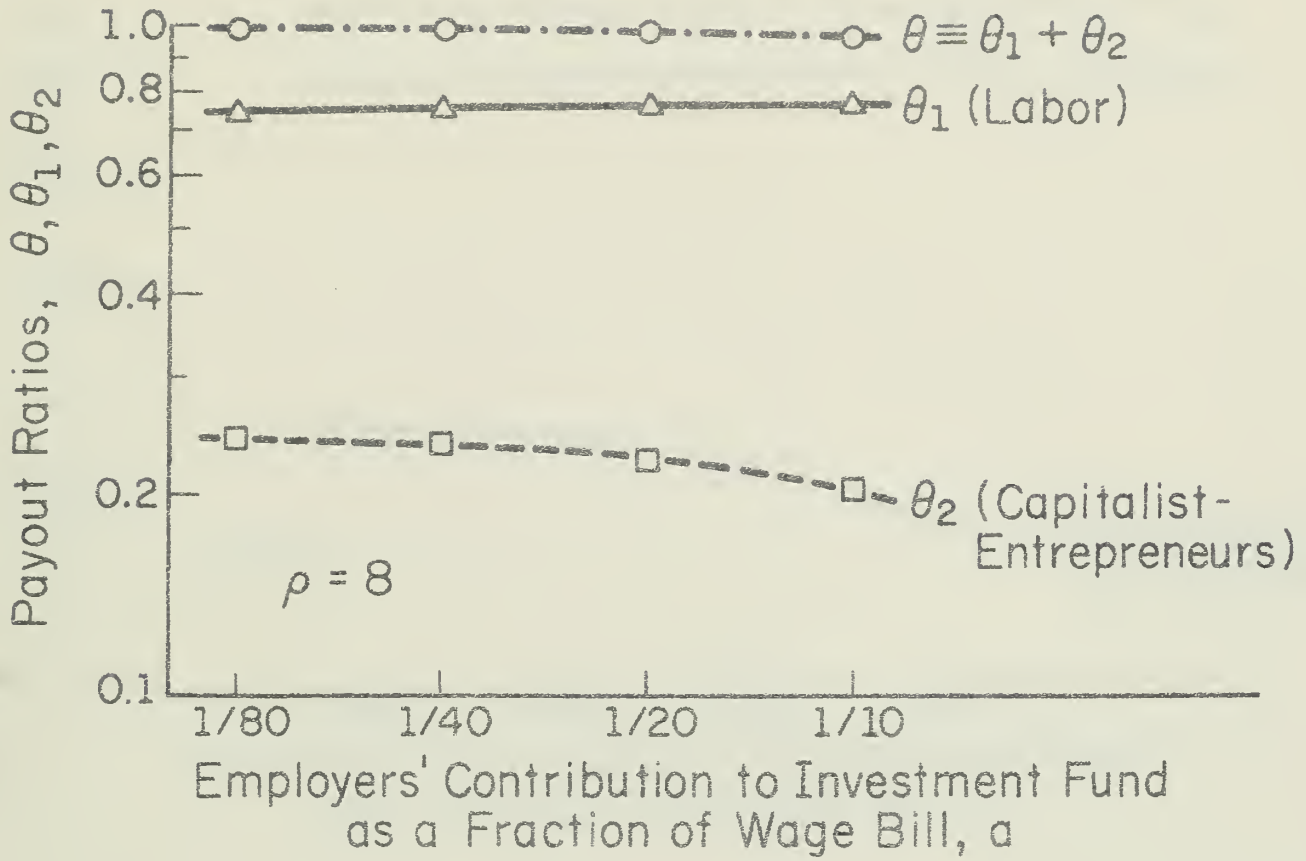
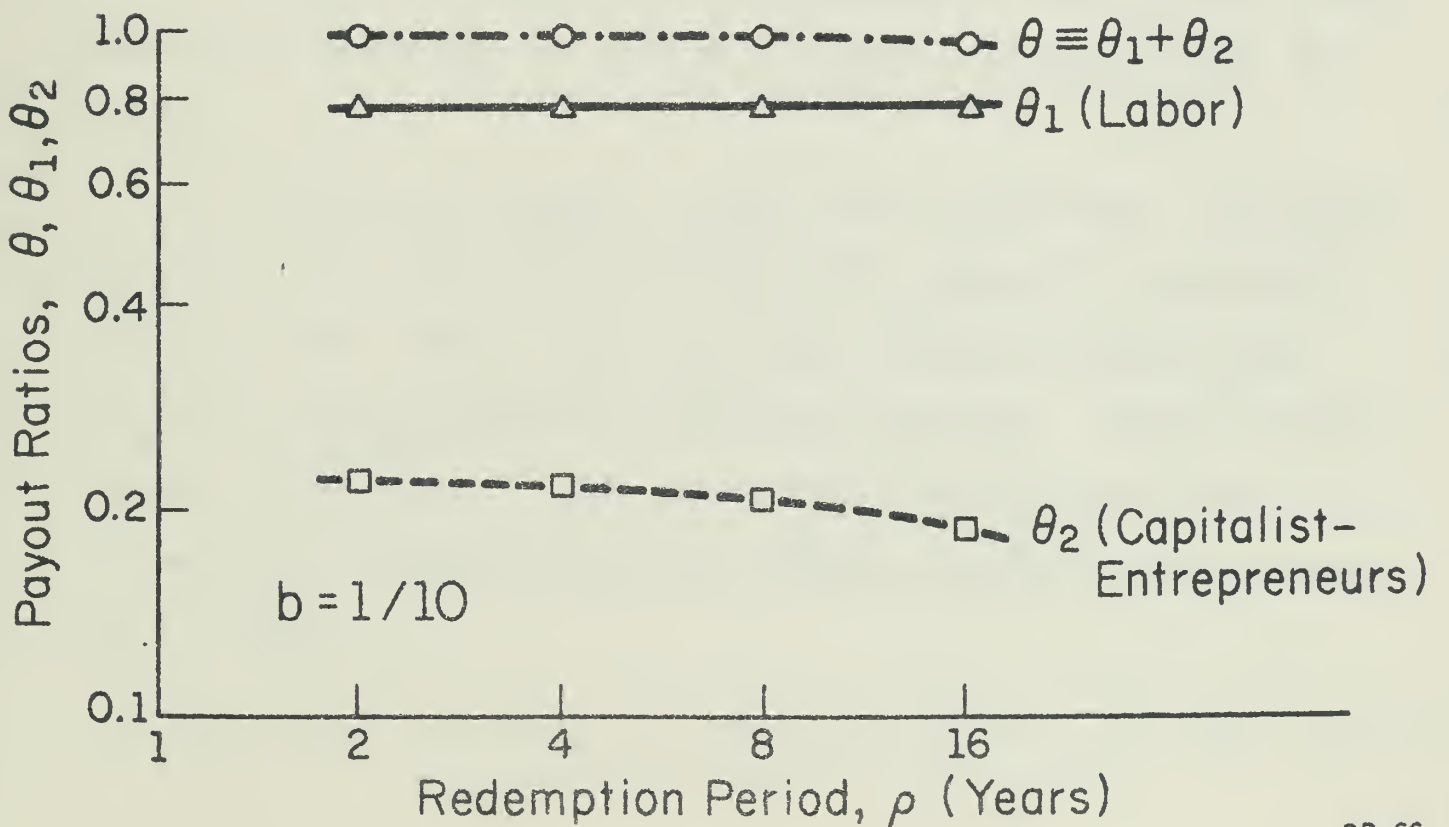
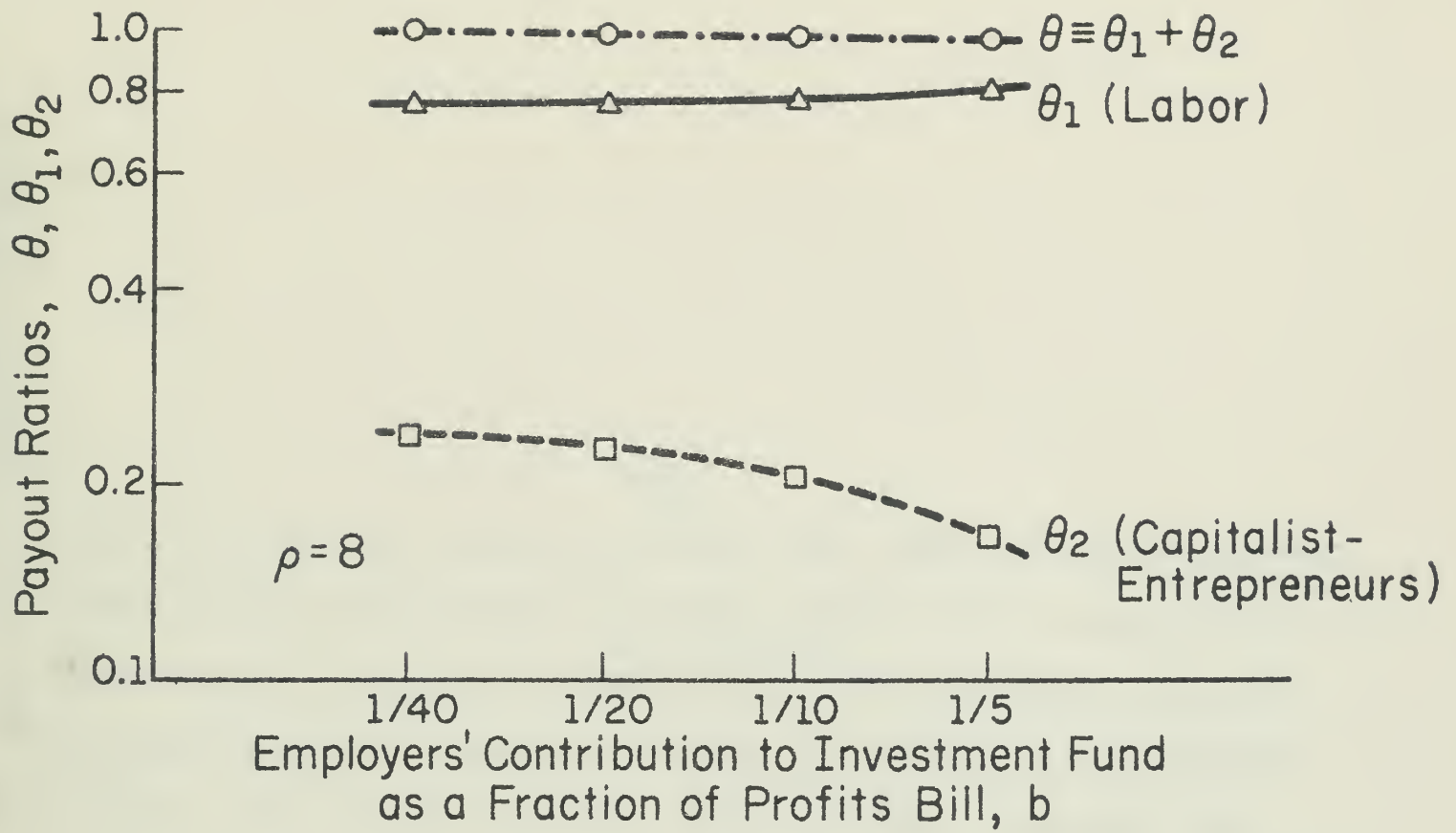


Figure 1. The Effects of an Investment Wage upon Income Distribution.



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Figure 2. The Effects of Profit Sharing upon Income Distribution.

constituting the fraction \underline{a} of the wage bill and profit sharing constituting the fraction \underline{b} of the profits bill, respectively, both having a redemption period of ρ . By the payout ratio θ is meant national disposable income as a fraction of national output. The payout ratios θ_1 and θ_2 are the disposable incomes of labor and capitalist-entrepreneurs, respectively, also measured as fractions of national output. By definition, $\theta \equiv \theta_1 + \theta_2$.

The results of Figures 1 and 2 read as follows. Both the investment wage and profit sharing will reduce the capitalist-entrepreneurs' payout ratio and raise labor's payout ratio —as our straightforward intuition suggested. What we could not see intuitively is that labor wins slightly less than the capitalist-entrepreneurs are losing, so the overall payout ratio is down.

7. Two Questions

The latter result is all the more remarkable if we raise two questions about the disposable-income definitions used until now: Under less extreme definitions the overall payout ratio is down even more!

Our first question is this. Will all wage earners actually present their fund certificates for redemption as soon as the latter become redeemable? British experience with voluntary, nonfunded profit sharing suggests a certain impatience: To its employees Imperial Chemical Industries issues shares annually as a bonus, but half the employees sell their shares immediately. When Courtaulds tried a similar bonus even more did, and the scheme was abandoned [40], 74. German experience with a voluntary, funded investment wage suggests less impatience, but experience with voluntary schemes

may be only remotely indicative of behavior under compulsory ones, as pointed out by Robinson [37], 126-127. As for compulsory schemes, some impatience is evident in labor-union attitudes to the length of the redemption period under proposed schemes: A redemption period of zero assured labor-union endorsement of the Gleitze Plan in 1961. A redemption period of 5 years was proposed by Danish unions but was lengthened to 7 years in the Danish bill.

Keynes questioned the assumption that all wage earners present their fund certificates for redemption as soon as the latter become redeemable: "It may be," he said, "that the blocked deposits will be instrumental in spreading the habit of small savings more widely." [27], 47.

The second question arising in connection with our disposable-income definitions has to do with capital gains. Such gains were excluded from the disposable income of

capitalist-entrepreneurs——an exclusion well founded in convention². But redemption of a fund certificate was defined as including the share of that certificate in the original contribution to the fund and all capital gains and dividends made on that contribution during the lifetime of the certificate. Redemption thus defined was a component part of wage earners' disposable income. May such inclusion be justified by the fund's indirectness and remoteness? Or may it not be? May the inclusion of the original contribution and the capital gains made on it overstate disposable labor income as conceived by labor itself?

What can be safely said is this. Wage earners can redeem after but never before the expiration of the redemption period. Of the original contribution and the capital gains made on it, wage earners could consider as disposable income less but never more than 100%. Consequently, our disposable-income definitions

are bound to understate the thriftiness of wage earners. The wage earners might well be more reluctant to redeem and more reluctant to spend what is redeemed. In conclusion, with less extreme definitions of disposable income, labor's as well as the overall payout ratio would be even lower than apparent from our computer simulation.

8. Investment Wage Versus Profit Sharing

Does an investment wage have the same redistributive effect as profit sharing? Let us compare Figures 1 and 2.

The investment wage was the fraction a of the wage bill, and in the top half of Figure 1, a goes from 1/80 to 1/10. Profit sharing was the fraction b of the profits bill, and in the top half of Figure 2, b goes from 1/40 to 1/5. Merely comparing the diagrams we are left with the impression that the investment wage has a weaker redistributive effect than

has profit sharing.

But the diagrams don't tell the whole story. As we know, the wage bill is much larger than the profits bill. Indeed, our computer simulation realistically assumed it to be three times larger: The wage bill was $3/4$ and the profits bill $1/4$ of national output. Consequently, an investment wage equalling, say, $1/10$ of the wage bill equals $1/10 \times 3/4 = 3/40$ of national output. And profit sharing equalling, say, $1/5$ of the profits bill equals $1/5 \times 1/4 = 1/20$ of national output. The investment wage, then, is one-and-a-half times larger than profit sharing, yet—as the visual comparison between Figures 1 and 2 showed—has a weaker redistributive effect. Why should this be?

The explanation is not difficult to find. To be true, whether in the form of an investment wage or in the form of profit sharing, contributions are collected from the employer.

But under the full-employment policies prevailing in countries considering a wage earners' investment fund, the investment wage can be shifted to the price of goods, while profit sharing cannot. This is seen as follows.

The investment wage is a fraction of the wage bill, consequently a man not hired will cost the firm no investment wage. Let there be pure competition. Let the money wage rate be raised by the amount of the investment wage per man year. Only if this raises the price of goods in the same proportion can the money wage rate remain equal to the value of the marginal productivity of labor at full employment. Thus the investment wage must be shifted to the price of goods under pure competition³. A very similar argument would hold under monopoly, oligopoly, or monopolistic competition.

No such shifting could occur under profit sharing. Here, let profit sharing be the fraction b of the profits bill. Then

by manipulating employment, employers are maximizing profits after contribution to the fund but before dividends, i. e., are maximizing the fraction $1 - \underline{b}$ of the profits bill. But the same employment which maximizes the profits bill itself will maximize the fraction $1 - \underline{b}$ of it.

So much for the redistributive effects of a wage earners' investment fund. Now for its effect upon saving.

9. Saving: Same Propensities to Consume Disposable Real Income

Let us begin with the simplest alternative, i. e., that the propensity to consume disposable real income is unaffected by the introduction of the wage earners' investment fund and is the same for wage earners and capitalist-entrepreneurs. Since ~~as we just saw~~ a wage earners' investment fund will reduce the national disposable-income fraction of national

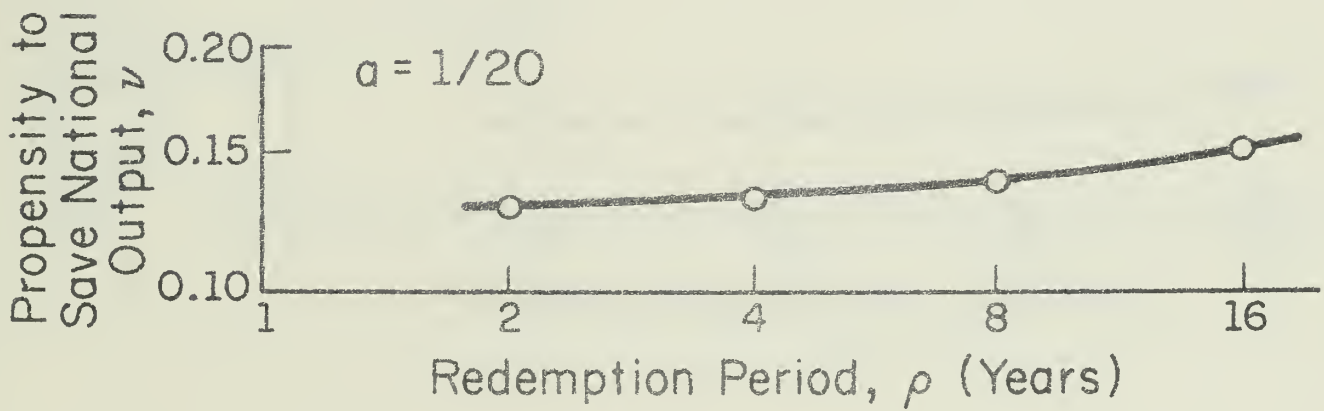
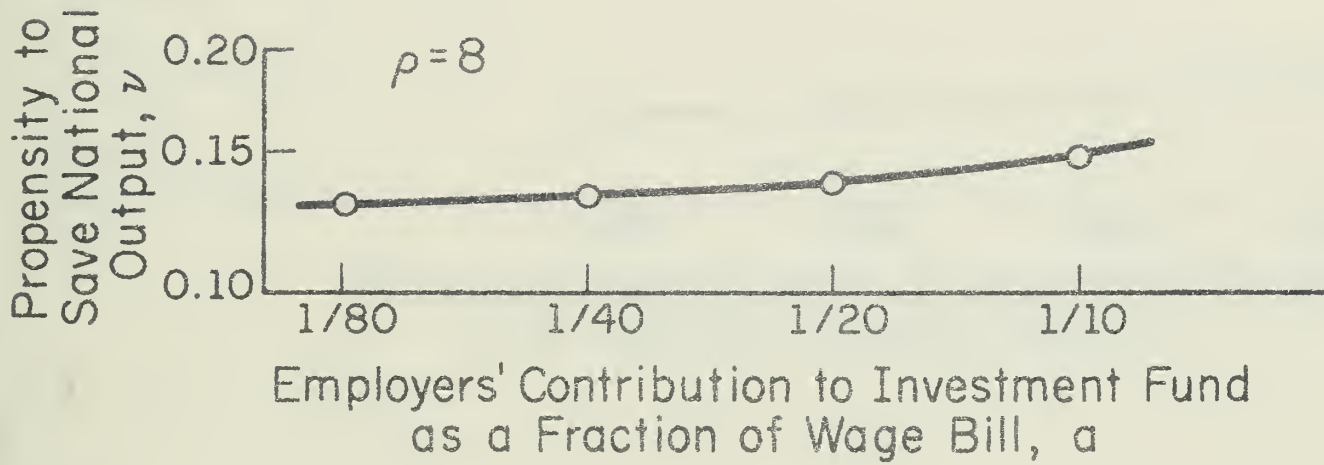
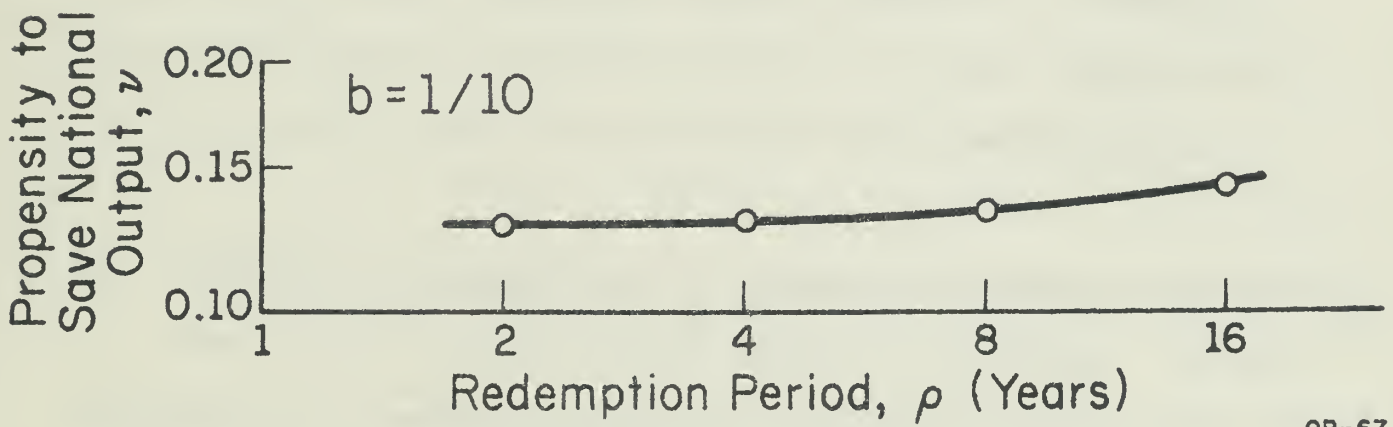
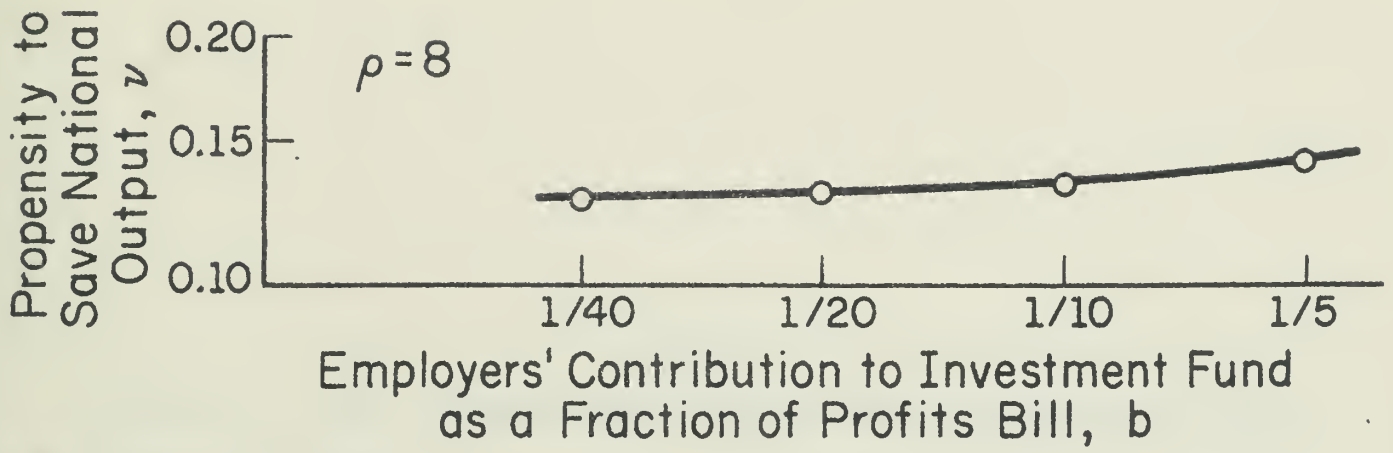


Figure 3. The Effects of an Investment Wage upon Saving.



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Figure 4. The Effects of Profit Sharing upon Saving.

output, it will unequivocally raise the propensity to save national output.

The results of our computer simulation [6] and [7], shown in Figures 3 and 4, bear this out. Figure 3 shows the effects of an investment wage upon the steady-state propensity to save national output, called v . Figure 4 shows the effects of profit sharing. In both diagrams the positive effect upon the propensity v is unmistakable.

10. Different Propensities to Consume Disposable Real Income

Now let us examine a less simple alternative. If the propensity to consume disposable real income is not the same for wage earners and capitalist-entrepreneurs the propensity to save national output may fall.

As we saw, both an investment wage and profit sharing

ultimately redistribute disposable income in favor of the wage earners. Consequently, if wage earners have a substantially higher propensity to consume disposable real income than do capitalist-entrepreneurs, then redistributing disposable income from capitalist-entrepreneurs to wage earners may conceivably overwhelm the effects of reducing the national disposable-income fraction of national output, and the net effect may be a fall in the propensity to save national output. Such a fall is less likely to result under an investment wage with its weaker redistributive effect than under profit sharing.

So the propensity to save national output may rise, or it may fall. We cannot settle the issue on a priori grounds⁴. Opposing forces, the relative strengths of which are not sufficiently known, are at work here. On the one hand, the disposable-income definitions used in our computer simulation

represent extremes. Wage earners can redeem after but never before the expiration of the redemption period. Of the original contribution and the capital gains made on it, wage earners could consider as disposable income less but never more than 100%. Consequently our definitions are bound to understate the thriftiness of wage earners. On the other hand, assuming the propensity to consume disposable real income to be the same for wage earners and capitalist-entrepreneurs is bound to overstate the thriftiness of wage earners.

11. Macroeconomic Conclusions

Our tentative conclusions so far must be the following. First, a wage earners' investment fund would reduce the national disposable-income fraction of national output. Second, it would redistribute disposable income in labor's

favor. Third, the investment wage would have a weaker redistributive effect than would profit sharing. The reason is that the former could be shifted to the price of goods while the latter could not. Fourth, the fund might raise the propensity to save national output. An investment wage with its weaker redistributive effect would be more likely to do so than would profit sharing.

IV. MICROECONOMIC EFFECTS

1. Microeconomics

A macroeconomic model had only one resource allocation in it, i. e., the allocation between consumption and invest-

ment. The simple reason was that it was a one-good model.

The real world is not a one-good economy and therefore poses an additional and far larger resource-allocation problem, i. e., how is capital allocated among industries? It will take multi-industry theory, microeconomic theory, to answer such a question. We cannot go too far in that direction, but let us at least consider the role played by the capital market in such an allocation. Once that role is understood, we may see how it is modified by the emergence of a wage earners' investment fund as a major stockholder.

It is always nice to bear in mind the numerical order of magnitude of things discussed. Therefore, our Appendix I has assembled a few facts about the corporation and its life nerve, the stock certificate, in the economy.

2. What Does a Capital Market Do?

Let us begin with the stockholder and let us examine him in his pure form by assuming complete separation between ownership and control in the large corporation. Complete separation means two things. First, that stockholders do not manage—— not even by voting at the stockholders' meeting, which most of them never attend anyway. Second, that management does not own stock. But if he neither votes at the stockholders' meeting nor manages the corporation, what does a stockholder do? The answer is that he votes in a more significant way by making up his mind to keep, buy, or sell stock. He keeps or buys stock that looks promising to him. He sells stock that no longer does. As a first approximation he could be said⁵ to optimize the composition of his stock portfolio by maximizing the present worth, as he sees it, of future profits bills—— the ultimate source of his future dividends and capital gains.

The present worth, as he sees it, of future profits bills is a subjective judgment unique to the individual stockholder. But in the U. S. on the basis of such subjective judgments 31 million stockholders' minds are made up daily to keep, buy, or sell stock. The resulting stock-market prices are objective and observable enough and represent the terms on which new equity capital can be raised by stock issuing.

A bondholder or other lender will judge the firm's credit worthiness by the present worth, as he sees it, of the firm's future profits bills. Their subjective judgments will decide the terms on which new borrowed capital can be raised.

Even a firm trying to depend on neither stock issuing nor borrowed capital, depending instead on its own retained profits, must try to maximize the present worth of its future profits bills. Paradoxically, then, in trying to stay clear of capital-market discipline the firm must behave in the

very way that discipline would have forced it to behave!

One way or the other, directly or indirectly, then, management is subject to capital-market discipline. Subject to such discipline, management must try to develop, produce, and sell products promising the most rapidly growing future profits. In an ideal capital market all ideas to do so will be scrutinized, and scrutiny means interindustry comparisons of profitability. As a result, by facilitating the entry of capital into more profitable industries and by denying capital to less profitable ones, an ideal capital market would equalize rates of return among industries.

As we know, the actual capital market falls short of this ideal.

First, in the trial-and-error game of developing, producing and selling products, some trials reach particularly far into a future shrouded in uncertainty. Prospecting

for oil and natural gas or searching for new pharmaceuticals may be very time-consuming, and there is always the risk that what is being looked for isn't there! Industries specializing in such trials may attract little entry.

At the very least, if such industries are to be entered they may have to be entered on a large scale or not at all. The reason is a peculiar trade-off between risk and scale. Think of an industrial research project as one trial of a game which the firm plays against nature with the probability q of winning. Assume the occurrence of success in one trial not to affect the probability of success in any other trial. Let n be the number of research trials undertaken at the same time and r the number of such trials resulting in success. As a simple illustration set $q = 1/2$, $r = 0$, and $n = 1$ through 6, thus finding the probability that none of the research trials results in success or—in the businessman's terms

—the probability that the entire capital invested in research in all trials is lost. That probability declines dramatically as n rises from 1 to 6: For the small firm, which can afford only one trial, the probability is 1/2. For the large firm, which can afford six simultaneous trials, the probability is merely 1/64, Brems [4], 280.

To facilitate the financing of large scale, especially capital-intensive large scale, is the purpose of the corporate form. That the form was needed is apparent from the fact that in U. S. manufacturing, the largest 200 corporations account for merely 43% of value added but for 61% of total assets, cf. our Appendix I. But the corporate form notwithstanding, large-scale entry remains more difficult than small-scale entry, and even with the trade-off between risk and scale, then, the industries described may attract little entry. As

Hall and Weiss [25] have found, large firms may systematically earn a higher rate of return than small ones.

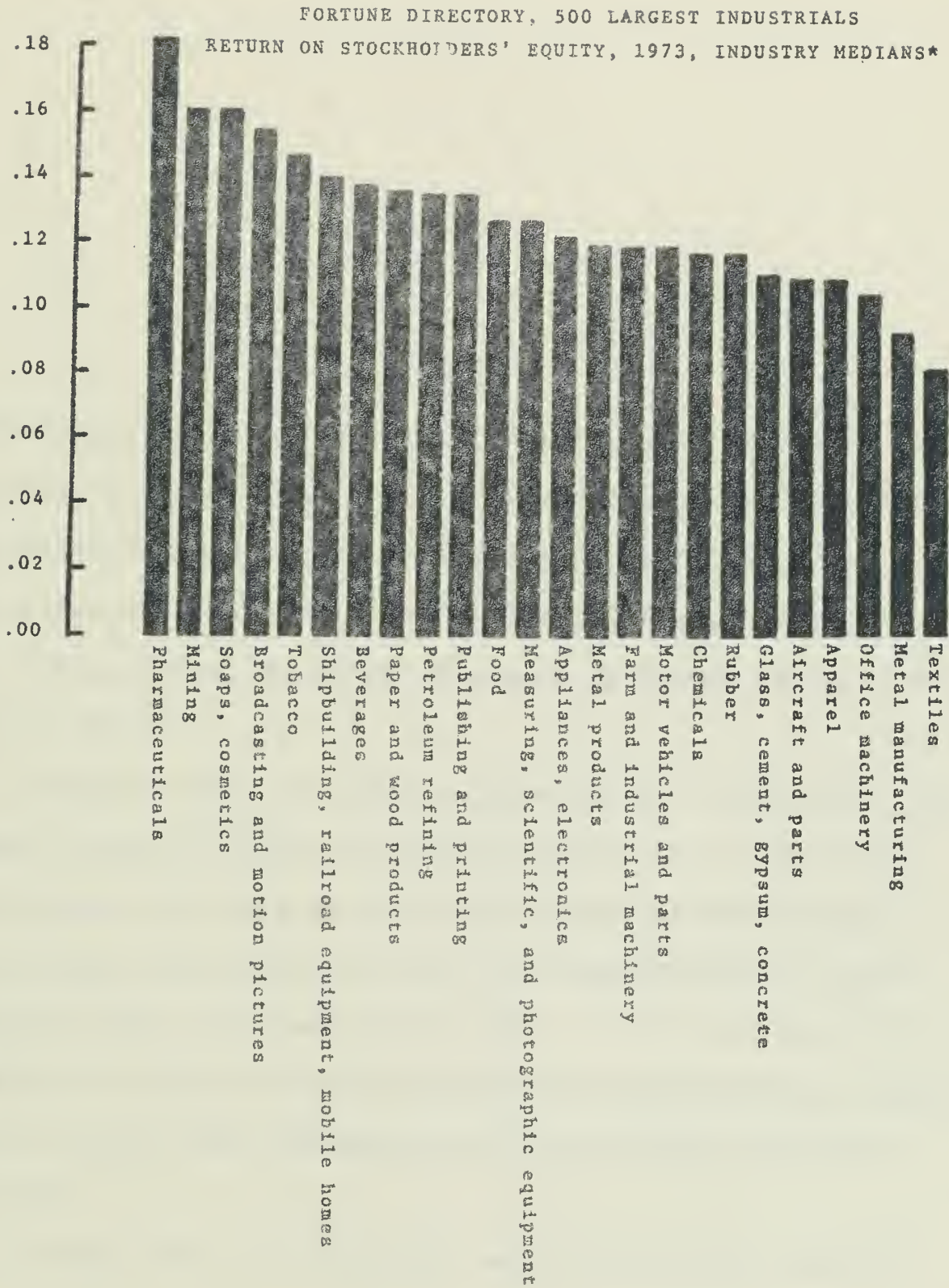
Second, there are the familiar barriers to entry raised by economies of scale in production or selling: Indivisibility of physical production equipment may force an entrant to either enter on a large scale or not at all. This barrier is important in the automobile or flat glass industries. Or high consumer preference for leading brands may force entrants to either overcome such preference by high and sustained costs of promotion of their own or to reconcile themselves to a lower selling price. This barrier is important in the cigarette and pharmaceuticals industries.

Third, there are the equally familiar legal barriers to entry. Patent protection may force entrants to obtain license or engage in time-consuming and at worst futile research of their own. This barrier is important in the chemical, electric-

al equipment, and the pharmaceutical industries. Another legal barrier may be ownership of superior mineral deposits by existing firms forcing entrants to exploit inferior ones or engage in time-consuming and at worst futile exploration of their own. This barrier is important in the aluminum, nickel, and sulphur industries.

For these three reasons, and several others, the capital market falls short of its ideal and fails to equalize rates of return among industries. How far does it fall short?

As an illustration let me use⁶ the Fortune Directory of the largest 500 U. S. industrial corporations for 1973 [23]. Here the rate of return on stockholders' equity is defined as the ratio between net income after interest and after tax, on the one hand, and equity on the other. Equity, in turn, is defined as assets minus debt, and assets are



*Data: Fortune, May 1974, 254. © 1974 Time, Inc.

Figure 5. Variation of Return among Industries.

defined as year-end assets after depreciation and depletion. The rate of return thus defined is the one which entry and exit would tend to equalize among industries [25], 321. In this sense the definition is the "theoretically correct" one. It was also the definition used by Dahmén [10], I, 91 and II, 37-61.

Figure 5 shows industry medians for 24 industries. The highest rates of return are roughly twice the lowest ones. The highest rates are 0.181 and 0.161 for pharmaceuticals and mining, respectively—our two illustrations of particularly risky trial-and-error games. The lowest rates are 0.082 and 0.093 for textiles and metal manufacturing, respectively—less risky industries with less scope for breakthroughs.

So much for the capitalist way of allocating capital

among industries. It has nothing sacred to it and may not be compatible with what one personally considers "just". There are other ways of doing the job, e. g., by an authoritarian bureaucracy or by a democratic one. Historically, however, the capitalist way——unlike alternative ways——has generated the kind of high-wage economy which has attracted large numbers of immigrants to it. Examples are the U. S. in the half-century preceding the restriction of immigration in 1924, and the Federal Republic of Germany in the quarter-century following the currency reform of 1948.

Would a wage earners' investment fund interfere with the vitals of the capitalist way of allocating capital among industries? Perhaps not, but three points are worth examining.

3. First Point: Narrower Opportunity for Self-Financing

It has often been observed⁷ that capital raised by issuing stock, by borrowing, and by self-financing carry different price tags, hence are not perfect substitutes to the firm. To be marketable, stock must offer a prospect of dividends and capital gain. To the firm, then, offering such a prospect is the price to be paid for capital raised by issuing stock. Interest is the price to be paid for borrowed capital. Neither price has to be paid for self-financing, hence the firm's preference for the latter. The riskier the investment project considered, the stronger the preference.

That capital raised by issuing stock, by borrowing, and by self-financing carry different price tags becomes significant under a wage earners' investment fund to which the firm must contribute in the form of corporate stock.

To be true, no cash is being contributed, so the cash equivalent of the contribution is still available for financing—in accordance with Gleitze's [24] leading idea. But the contribution has generated new stock. Perhaps it would help to visualize the contribution as follows: The firm would first contribute cash to the fund, then issue new stock and sell it to the fund in order to recover the lost cash. The firm ends up with the cash and the fund with stock, as they should, but it has become more transparent that a wage earners' investment fund simply forces the firm to give up some of its self-financing and to resort to issuing stock⁸.

Such a substitution of stock issuing for self-financing could be looked at from two different angles. First, one might deplore it: If it is true that the riskier the investment project considered, the stronger is the firm's preference for self-financing, then a wage earners' investment fund will

induce the firm to substitute less risky for more risky projects. This could decelerate technological progress.

From another angle the substitution of stock issuing for self-financing might be welcomed: The substitution will strengthen capital-market discipline. Funds previously withheld from the capital-market test would now be forced to submit themselves to it. Stock must ultimately find a stockholder willing to hold it. It will do so only if it offers him a prospect of dividends and capital gain. Should he sell it, its market value would suffer, jeopardizing the marketability of future stock issues by the same firm.

But would a wage earners' investment fund really be like any other stockholder unwilling to hold stock not offering a prospect of dividends and capital gain? Is the fund always on the lookout for high-return stock, always trying to get rid of low-return stock? This carries us to our second

point.

4. Second Point: Motivation of a Wage Earners' Investment Fund

Under pure capitalism a stockholder was said to optimize the composition of his stock portfolio by maximizing the present worth, as he sees it, of future profits bills—the ultimate source of his future dividends and capital gains.

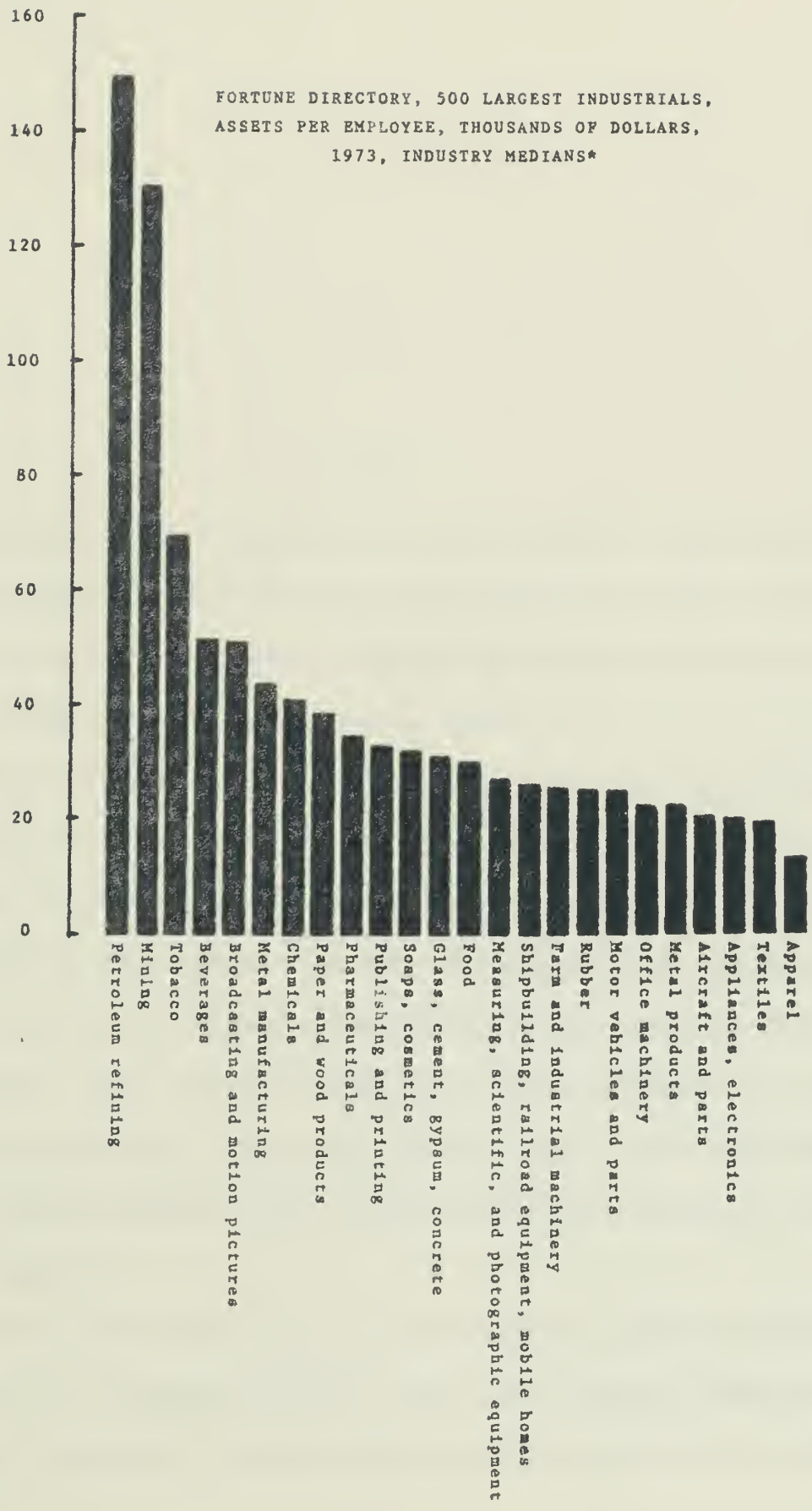
Would a wage earners' investment fund be similarly motivated?

In principle it might well be. Existing and proposed wage earners' investment funds are entitled to buy and sell stock as they see fit. Indeed, sometimes maximization of present worth is prescribed. The Danish union proposal, Landsorganisationen [30], Sec. 14, as well as the Danish bill, Arbejdsministeriet [1], Sec. 22, specifically demanded an "active" placement of the fund and defined "active" as

guaranteeing, first, a share of the capital gains of the economy and, second, a maximum dividend. Even when not prescribed, present-worth maximization may be likely, especially if a number of competing, decentralized funds were set up among which the individual wage earner would be free to choose—as he would according to the German coalition government proposal [21].

The fund as a present-worth maximizer would be selling stock and buying other stock. This would be true under profit sharing as well as under an investment wage. But the latter generates a special need for such selling and buying, rooted in an inherent anomaly of the investment wage.

Under an investment wage, contributions are in proportion to the wage bill. Consequently, less capital-intensive firms—with less investment need—will contribute proport-



*Data: Fortune, May 1974, 254. © 1974 Time Inc.

Figure 6. Variation of Capital Intensity among Industries.

ionately more than capital-intensive ones——with more investment need. Present-worth maximization would require the fund to buy stock in more capital-intensive firms and sell stock in less capital-intensive ones.

Such a buying-and-selling job might well be a big one, for capital intensity differs very significantly among industries. As an illustration, I use once again⁹ the Fortune Directory of the largest 500 U. S. industrial corporations. Figure 6 shows industry median assets per employee for 24 industries. The most capital-intensive industry, i. e., petroleum refining, has more than eleven times as large assets per employee as the least capital-intensive one, i. e., apparel.

We conclude that the job of shifting funds away from less capital-intensive firms into more capital-intensive ones will require a large volume of transactions——not

to mention the additional jobs of shifting funds away from less rapidly growing and less well-managed firms.

Would the fund be allowed to do its job? The employees of less capital-intensive, less rapidly growing, or less well-managed firms would be the very ones whose employment would be most vulnerable. To such employees the exercise of their co-determination rights might well look like a last defense—to be taken away from them if the fund sells "their" stock! They would no doubt demand a hearing, and such a hearing was indeed suggested in an official comment to the Danish bill, Arbejdsministeriet [1], 22. Hearing or no hearing, a conflict remains between the interests of the wage earner qua owner of the investment fund and qua holder of a particular job. Or, ultimately, a conflict remains between the two purposes of a wage earners' investment fund: Giving labor a share of, first, the capital gains, and, second,

the co-determination rights inherent in stock ownership. Such a conflict could play havoc with our presumption of identical motivation of the stockholder and the wage earners' investment fund. The conflict might keep less capital-intensive, less rapidly growing, and less well-managed firms alive at the expense of more capital-intensive, more rapidly growing, and better-managed firms. Such a possibility looms larger when we consider the size of a wage earners' investment fund.

5. Third Point: A Large Fish in a Small Pond

Even apart from the conflict just mentioned, a wage earners' investment fund still wouldn't be just another stockholder. Its sheer size would make it unique among stockholders. To be true, funds of a realistic order of

magnitude would probably [6], [7], or [8] account for 10% or less of the total physical capital stock of the economy. But our Appendix I shows that in the U. S. as well as in Germany and Sweden, corporation finance relies much more on self-financing and borrowing than on issuing stock. As a result, stock markets are small, and in such markets a wage earners' investment fund could easily be a large fish in a small pond: The Danish bill [1] anticipated a single central fund owning 35% of all Danish corporate stock by 1986. A parallel to such disproportionate size was noticed in the Swedish commission report proposing purchase of corporate stock by the general pensions fund [38], 73, 80-81.

A mistaken judgment by a very large fund, whether a wage earners' investment fund or a general pensions fund, will always be a whopping mistake with nothing to cancel it. By contrast, in a decentralized market,

price formation is the outcome of a vast number of individual judgments. The number of mistakes would also be vast, but the very vastness means that most of them would cancel.

6. Microeconomic Conclusions

A general conclusion is that the capital market isn't just there for the sake of the capitalists. It represents a complex mechanism with profound effects upon the rest of the economy. Historically that mechanism has helped generating such high-wage economies as the U. S., the German Federal Republic, and Sweden. A wage earners' investment fund could tamper with that mechanism in at least three conceivable ways. First, and least important, a wage earners' investment fund would narrow the opportunities for self-financing. Second, because of its less clear-cut motivation, the fund might keep less capital-intensive, less rapidly growing, and less well

-managed firms alive at the expense of more capital-intensive, more rapidly growing, and better-managed firms. Such malallocation of resources would be more likely under an investment wage than under profit sharing. Third, in any event a centralized fund would be a large fish in a small pond, and its mistakes would consequently be whopping mistakes with nothing to cancel them.

APPENDIX I

THE CORPORATION AND THE STOCK CERTIFICATE IN THE ECONOMY

1. The Corporation

The large corporation looms very large in a modern capitalist economy. In U. S. manufacturing in 1971, the 200 largest corporations accounted for 43% of total value added but held 61% of total assets [41], 483. Thus they loom particularly large in capital-intensive industries.

2. The Stock Certificate

In view of the preponderance of the large corporation, the modest numerical significance of its life nerve, the stock certificate, may seem surprising.

The significance of the stock certificate may be measured in two different dimensions.

First, the asset-liability dimension. On corporate stock as a household asset we have comparable data for the U. S. [41], 441, and the Federal Republic of Germany [14], 28. For the two countries in 1971 corporate stock at current

market value constituted 37% and 10%, respectively of financial assets of households. In this sense the U. S. household is three-and-a-half times as willing to supply risk capital as is the German household.

On corporate stock as a liability of firms, U. S. Federal Reserve System data [41], 440, are silent. But for the German Federal Republic [14], 29, in 1971 corporate stock at issue value constituted 13% of the liabilities of nonfinancial, nonresidential firms, whether corporations or not. Corporate stock at current market value would be a far larger percentage, i. e., 29%.

Second, the uses-and-sources-of-funds dimension. Stock issue is an external source of funds, financing long-term investment. U. S., German, and Swedish data permit us to measure stock issue as a per cent of gross investment in physical assets.

U. S. data [41], 475, apply to nonfarm, nonfinancial corporations and show an average of 7% for 1967-71.

German data are twofold. First, the flow-of-funds account [12], 22 and [13], 28, of the German Federal Bank defines stock

issue narrowly as merely shares in Aktiengesellschaften. Its data apply to all nonfinancial, nonresidential firms, whether corporations or not, and show an average of 3% for 1967-71. Second, in its annual report on the balance sheets of firms [15], 39, [16], 29, and [17], 34, the German Federal Bank defines stock issue widely as shares in both Aktiengesellschaften and Gesellschaften mit beschränkter Haftung¹⁰. Here, the data apply to nonfarm, nonfinancial, nongovernment, and non-personal-service firms, whether corporations or not, and show an average of 7% for 1967-71—same as the U. S. for the same period.

Swedish data as used by Eliasson [20], 34 and Kjellman-Nordling [28], 11, apply to manufacturing firms with more than 50 employees excluding electric-power generation and show an average of 6% for 1956-70. Swedish data as used by an in-depth study by Löwenthal [32], 115, 122-124, 128-129, and 132-140, applied to an overlapping group, i. e., corporations with more than 50 employees including electric-power generation. This group showed an average of 12% for 1955-62.

APPENDIX II
A MINI GERMAN-ENGLISH DICTIONARY

More must have been written in German on wage earners' investment funds than in any other language. The reader may find the following mini dictionary helpful:

Die Anteilscheine	≡	Fund certificates
Die Beteiligungsquote	≡	Contribution fraction
Die Ertragsbeteiligung	≡	Profit Sharing
Der Fonds	≡	Wage earners' investment fund
Die Gewinnbeteiligung	≡	Profit Sharing
Der Investivlohn	≡	Investment wage
Die Sperrfrist	≡	Redemption period

FOOTNOTES

¹For more detailed accounts, see Robinson [37] and The Economist Intelligence Unit [39]. For a mini German-English dictionary, see Appendix II.

²Bhatia [3] found a marginal propensity to consume capital gains of 0.06, less than one-tenth of a marginal propensity to consume income of 0.70 to 0.80.

³Forsyth [22], 65 is mistaken in thinking that only oligopolistic market structures permit shifting of the investment wage to the price of goods.

⁴as is being done in the otherwise quite inquisitive German theoretical literature. Here, a negative effect on the propensity to save national output is universally predicted. But the prediction is logical enough: It simply follows from always assuming a zero redemption period, thus ignoring fund generation, see Jaeger [26], Krelle, Schunck, and Siebke [29], 52-86, Nückl [35], and Ramser [36]. Is not redistribution of wealth with

a zero redemption period a bit like Hamlet without the prince?

Fund generation was ignored by neither Forsyth nor the Danish Council of Economic Advisers. Forsyth merely expected it to prevent a drop but never mentioned a rise in the propensity to save national output, [22], 66 and 72. The Danish Council did expect fund generation to raise substantially the propensity to save national output, [11], 43, 49.

⁵as the present writer has done in a two-industry steady-state growth model of full resource allocation, [5], Ch. 8.

⁶Data used from the Fortune Directory by special permission, copyright Time, Inc.

⁷E. g., Duesenberry [19], Chs. 4-5, Krelle, Schunck, and Siebke [29], 196-201, Löwenthal [32], 19-28, and [38], 72. For criticism of the observation, see Modigliani-Miller [34], and Eliasson [20], 48-52.

⁸Strictly speaking, therefore, it is misleading to imply that the firm's liquidity remains unaffected by contributions in the form of corporate stock, as Gleitze [24], Bergström [2], 62, and Forsyth [22], 73, are doing. To be true, Bergström's redemption period is infinite, but he does think of his wage earners' investment fund as a return maximizer. Consequently the fund will not hold the contributed stock unless dividends and capital gains can be expected on it.

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¹⁰The shareholders of a G. m. b. H. enjoy the same limited liability to creditors as do shareholders of an A. G. But the stock of a G. m. b. H. is not as easily transferable as that of an A. G., and the minimum size of a G. m. b. H. is smaller than that of an A. G. In German terminology, G. m. b. H.'s and A. G.'s are called "Kapitalgesellschaften".

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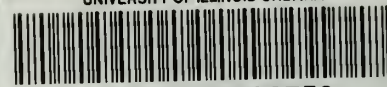
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